

REMARKS

Summary of the Amendment

Upon entry of the above amendment, the specification and claims 1, 2, 4 and 8-11 will have been amended. No new matter is added. Accordingly, claims 1-31 will be pending with claims 1, 18, 24 and 30 being in independent form. Claims 18-29 stand withdrawn on the basis of a previous election of species requirement.

Summary of the Official Action

In the instant Office Action, the Examiner objected to claims 10 and 11 (incorrectly listed as claims 11 and 12). The Examiner also rejected claims 1-17, 30 and 31 over the art of record. By the present amendment and remarks, Applicant submits that the rejections have been overcome, and respectfully requests reconsideration of the outstanding Office Action and allowance of the present application.

Support for Claim Amendments

Support for the amendment to claim 1 can be found in e.g., Fig. 1E which shows a low-k dielectric layer 65 with dummy fill shapes 70 arranged above the second rigid dielectric layer 60.

The Objection to the Claims is Moot

Applicant submits that the objection of claims 10 and 11 (incorrectly indicated by the Examiner as claims 11 and 12) is moot.

While Applicant respectfully disagrees that the claims are properly objected to, Applicant has, in an effort to advance prosecution, amended claims 10 and 11 in an effort to resolve this basis of objection.

Applicant requests that the Examiner reconsider and withdraw the objection of the above-noted claims.

Traversal of Rejection Under 35 U.S.C. § 102(b)

Applicant traverses the rejection of claims 1-8, 14, 17 and 30 under 35 U.S.C. § 102(b) as being anticipated by US patent 5,675,187 to NUMATA et al.

The Examiner asserted that NUMATA discloses or suggests all the features recited in these claims including the recited first and second rigid dielectric layers 118.

Applicant respectfully traverses this rejection.

Notwithstanding the Office Action assertions as to what NUMATA discloses, Applicant submits that NUMATA fails to disclose, or even suggest, for example, a first non-rigid dielectric wiring level formed on a first rigid layer, a second rigid layer formed on the first non-rigid dielectric wiring level, and a low-k dielectric layer having dummy

fill shapes arranged above the second rigid dielectric layer (claim 1). Additionally, NUMATA fails to disclose, or even suggest, for example, forming a first non-rigid dielectric wiring level on a first rigid layer, forming a second rigid dielectric layer on the first non-rigid dielectric wiring level, and forming a plurality of dummy metal fill shapes in the first non-rigid dielectric wiring level in proximity to the interconnect for preventing a portion of the first or second rigid dielectric layers adjacent the interconnect from de-layering away from the interconnect (claim 30).

NUMATA discloses a semiconductor structure which utilizes a low-dielectric constant material 116 arranged between two layers of an insulating material 118, which can preferably be silicon dioxide (see col. 8, lines 2-4). NUMATA also teaches arranging metal leads 114 in the layer 116 (Fig. 4). However, Applicant submits that NUMATA does not specifically disclose or suggest a first non-rigid dielectric wiring level arranged between two rigid dielectric layers or a low-k dielectric layer having dummy fill shapes arranged above the second rigid dielectric layer. The Examiner has not identified any language or figure in NUMATA which specifically discloses either a first non-rigid dielectric wiring level arranged between two rigid dielectric layers or a low-k dielectric layer having dummy fill shapes above the second rigid dielectric layer. Thus, Applicant submits that the above-noted claims are not disclosed, or even suggested, by any proper reading of NUMATA.

Moreover, Applicant submits that dependent claims 2-8, 14 and 17 are allowable at least for the reason that these claims depend from an allowable base claim and because these claims recite additional features that further define the present invention. In particular, Applicant submits that no proper reading of NUMATA discloses or even suggests, in combination, the features recited in claims 2-8, 14 and 17 in combination with the features recited in claim 1.

Applicant requests that the Examiner reconsider and withdraw the rejection of the above-noted claims under 35 U.S.C. § 102(b).

Traversal of Rejections Under 35 U.S.C. § 103(a)

Over Numata alone

Applicant respectfully traverses the rejection of claims 9-14, 17 and 31 under 35 U.S.C. § 103(a) as unpatentable over NUMATA alone.

The Examiner acknowledged that NUMATA lacks, among other features, the dimensions and spacing recited in these claims. However, the Examiner asserted that such features would have been obvious to one having ordinary skill in the art. Applicant respectfully disagrees with the Examiner's assertions and traverses this rejection.

Notwithstanding the Examiner's assertion as to what NUMATA discloses or suggests, Applicant submits that in addition to failing to anticipate the invention recited in

independent claim 1 and 30, NUMATA also fails to teach or suggest the invention recited in at least the independent claims 1 and 30. Applicant respectfully submits that the recited dimension values and spacing, in combination with the other features recited in claims 1 and 31, would not have been obvious to one having ordinary skill in the art and, furthermore, the recited dimensions and spacing constitute an aspect of the invention which is not merely a matter of design as evidenced by the description of the invention in paragraphs [0027] – [0029] of the specification. For example, the recited spacing provides for desirable dummy fill shape densities.

Applicant directs the Examiner's attention to the guidelines identified in M.P.E.P section 2141 which state that

"[i]n determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

As this section clearly indicates,

"[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

Moreover, it has been legally established that

"[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) Although a prior art device 'may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so. 916 F.2d at 682, 16 USPQ2d at 1432.). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references)."

Additionally, it has been held that

"[a] statement that modifications of the prior art to meet the claimed invention would have been well within the ordinary skill of the art at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)."

Moreover, Applicant submits that there is no motivation to modify NUMATA in a manner which would render obvious Applicant's invention, and additionally, Applicant submits that there is no motivation or rationale disclosed or suggested in the prior art to modify the applied reference in the manner suggested by the Examiner. The Examiner's opinion does not provide a proper basis for these features or for the motivation to modify this document in the manner suggested by the Examiner. Therefore, Applicant submits that the invention as recited in at least independent claims 1 and 30 is not rendered obvious by any reasonable inspection and interpretation of the disclosure of the applied reference.

Furthermore, Applicant submits that dependent claims 9-14, 17 and 31 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that no proper reading or modification of NUMATA discloses or suggests, in combination: the features recited in claims 9-14 and 17 in combination with the features recited in claim 1, and the features recited in claim 31 in combination with the features recited in claim 30.

Applicant requests that the Examiner reconsider and withdraw the rejection of the above-noted claims under 35 U.S.C. § 103(a).

Over Numata with Wang

Applicant respectfully traverses the rejection of claims 15 and 16 under 35 U.S.C. § 103(a) as unpatentable over NUMATA in view of published US patent application 2004/0207091 to WANG et al.

The Examiner acknowledged that NUMATA lacks, among other things, the materials recited in these claims. However, the Examiner asserted that such materials are taught in WANG and that it would have been obvious to one having ordinary skill in the art to combine the teachings of these documents. Applicant respectfully disagrees with

the Examiner's assertions and traverses this rejection.

Applicant submits that dependent claims 15 and 16 are allowable at least for the reason that these claims depend from an allowable base claim and because these claims recite additional features that further define the present invention. In particular, Applicant submits that no proper reading or combination of NUMATA and WANG discloses or suggests, in combination: the features recited in claims 15 and 16 in combination with the features recited in claim 1.

Also, notwithstanding the Examiner's assertion as to what NUMATA or WANG disclose or suggest, Applicant submits that in addition to failing to anticipate the invention recited in independent claim 1, each of NUMATA and WANG also fails to teach or suggest the invention recited in at least the independent claim 1.

Applicant notes, for example, that the Examiner has not identified any language or figure in either NUMATA or WANG which specifically discloses a first non-rigid dielectric wiring level arranged between two rigid dielectric layers alone or in combination with a low-k dielectric layer having dummy fill shapes arranged above the second rigid dielectric layer.

Applicant respectfully submits that the recited materials, in combination with the other features recited in claim 1, would not have been obvious to one having ordinary skill in the art and, furthermore, the recited materials, in combination with the features

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recited in claim 1 constitute an aspect of the invention which is not disclosed or suggested by any proper combination of these documents.

Applicant requests that the Examiner reconsider and withdraw the rejection of the above-noted claims under 35 U.S.C. § 103(a).

CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicant's invention, as recited in each of the pending claims. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out. Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto. Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

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Authorization is hereby given to refund excess payments and charge any additional fee necessary to have this paper entered to Deposit Account No. 09-0456.

Respectfully submitted,
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